PATENT CLAIMS

1. A blank R for manufacturing a security key with at least two coding rows / pin rows (Ai) on the flat sides of the key for an assigned cylinder (Z) with tumbler pins (ZH) and with counter pins (GZH), characterised by
- two parallel lateral grooves RB-SN and a central projecting part RB-M between the lateral grooves, and which are formed parallel to the key axis (x) and symmetrically to the central plane of a coding row / pin row (A),
- said lateral grooves RB-SN in an entry region (RB-E) at the key tip running at a high level (N1) and in a coding region (RB-P) of the first coding positions (P1, P2) running in a sunk manner at a lower level (N2),
- wherein the lateral grooves RB-SN are suitably shaped, in order to correspond to additional lateral shoulders RB-ZH-S of an associated special tumbler pin RB-ZH and an extended counter pin RB-GZH of the cylinder,
- so that an additional insertion block in the entry region (RB-E) and an additional rotation block in the coding region (RB-P) can be carried out by the lateral grooves RB-SN and the lateral shoulders RB-ZH-S.

2. A blank according to claim 1, characterised in that the central projecting part RB-M is sunk to a lower level (RB-M(2)) in the coding region (RB-P).

3. A blank according to claim 1 or 2, characterised in that the complete width bg(2) of lateral grooves RB-SN and the central projecting part RB-M on both sides is larger than the width (bcv) of the coding recesses (Cod-V) of the coding row (A) by an amount (bb): bg (2) = bcv + 2 bb.

4. A blank according to one of the preceding claims, characterised in that the width (bm) of the central projecting part RB-M is at least 33% of the complete groove width (bg).

5 A blank according to one of the preceding claims, characterised in that the width (bn) of a lateral groove RB-SN is at least 20% of the complete groove width (bg).

6. A blank according to one of the preceding claims, characterised in that the inner walls (11) of the lateral grooves RB-SN are inclined at an angle Wm to the pin plane (A).

7. A blank according to claim 6, characterised in that the angle Wm is = 10° - 40°.

8. A blank according to one of the preceding claims, characterised in that with an inclined pin plane (A) with an inclination angle Wa > 0, on the inner side, an additional side groove

RB-nn adjoins to the lateral groove RB-SN, said side groove forming a supporting surface orthogonal to the coding plane / pin plane (A).

9. A security key with at least two coding rows / pin rows (Ai) on the flat sides of the key for an assigned cylinder (Z) with tumbler pins (ZH) and with counter pins (GZH), characterised by
- two parallel lateral grooves RB-SN and a central groove RB-MN between the lateral grooves, and these are formed parallel to the key axis (x) and symmetrically to the central plane of a coding row / pin row (A),
- wherein coding recesses are formed at the first coding positions (P1, P2) in the region of the central groove RB-MN in a coding region RB-P,
- and wherein the lateral grooves RB-SN in an entry region (RB-E) at the key tip running at a high level (N1) and in a coding region (RB-P) of the first coding positions (P1, P2) running in a sunk manner at a lower level (N2),
- wherein the lateral grooves RB-SN are suitably shaped, in order to correspond to additional lateral shoulders RB-ZH-S of an associated special tumbler pin RB-ZH and an extended counter pin RB-GZH of the cylinder,
- so that an additional insertion block in the entry region (RB-E) and an additional rotation block in the coding region (RB-P) can be carried out by the lateral grooves RB-SN of the key and the lateral shoulders RB-ZH-S of the tumbler pin RB-ZH.

10. A key according to claim 9, characterised in that the coding recesses of the first coding positions (P1, P2) are formed on a sunk central projecting part RB-M(2).

11. A key according to claim 9 or 10, characterised in that the complete width bg(2) of lateral grooves RB-SN and the central groove RB-MN on both sides is larger than the width (bcv) of coding recesses (Cod-V) of the coding row (A) by an amount (bb): bg (2) = bcv + 2 bb.

12. A key according to one of the claims 9 to 11, characterised in that with an inclined pin plane (A) with an inclination angle Wa > 0, on the inner side, an additional side groove RB-nn adjoins to the lateral groove RB-SN, said side groove forming a supporting surface orthogonal to the pin plane (A).

13. A key according to one of the claims 9 to 12, characterised in that RB coding steps Ci* in the coding region are situated higher or more deeply than the standard coding steps (Ci) of the coding row (A) with a correspondingly different length of the assigned tumbler pin RB-ZH.

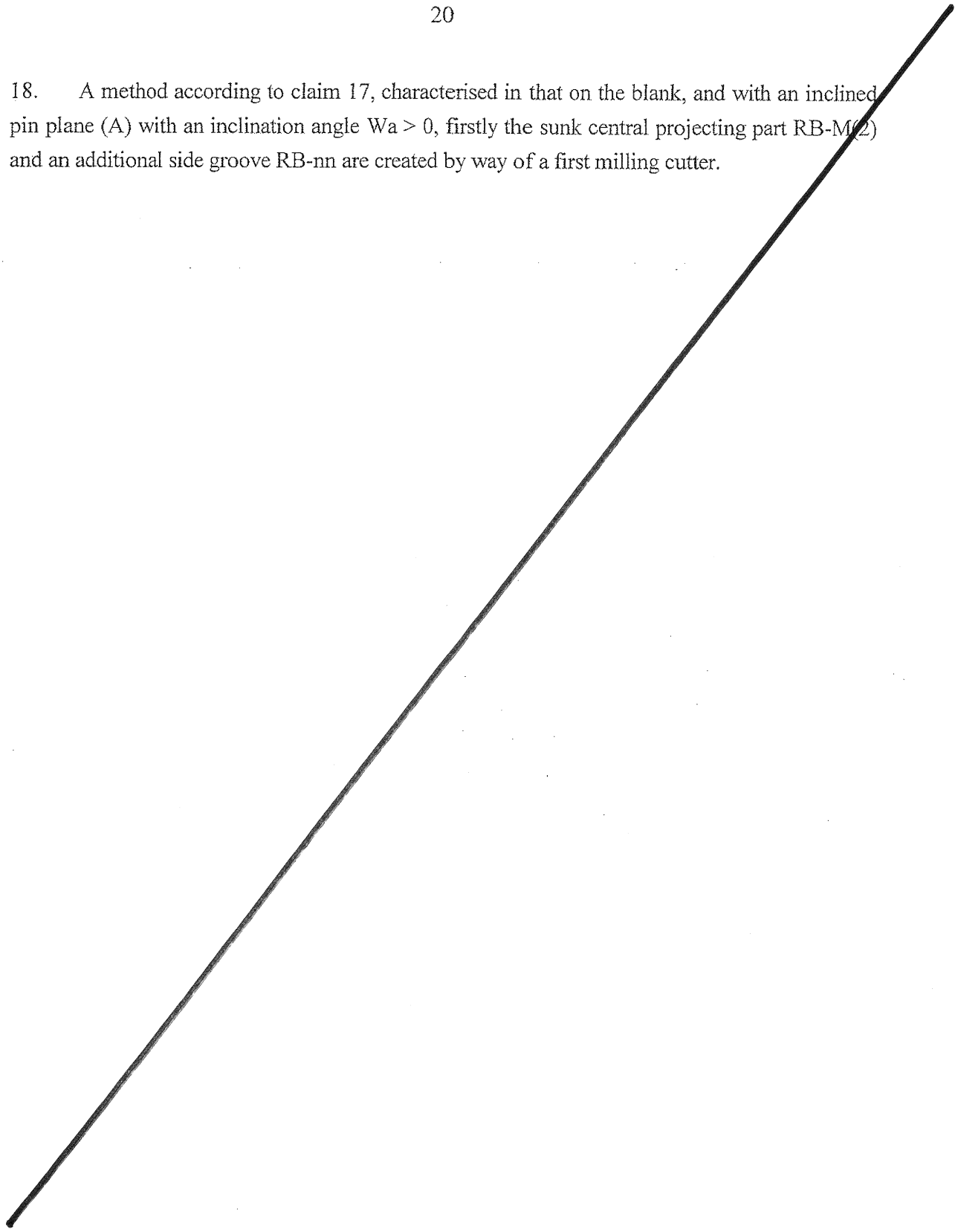
14. A key according to one of the claims 9 to 13, characterised in that the distance (dN) between the high level (N1) and the lower level (N2) is at least one coding step (dC).

15. A lock system with security keys (S) with at least two coding rows / pin rows (Ai) on the flat sides of the key and with assigned cylinders (Z) with tumbler pins (ZH) and with counter pins (GZH), characterised by
- keys (S) with two parallel lateral grooves RB-SN and a central groove RB-MN which are formed parallel to the key axis (x) and symmetrically to the central plane of a pin row (A), with coding recesses in the region of the central groove RB-MN at the first coding positions (P1, P2),
- said lateral grooves RB-SN in an entry region (RB-E) at the key tip running at a high level (N1) and in a coding region (RB-P) of the first coding positions (P1, P2) running in a sunk manner at a lower level (N2),
- and with assigned cylinders (Z) with a special tumbler pin RB-ZH at the rearmost coding position (P1, P2) of the cylinder, said special tumbler pin comprising additional lateral shoulders RB-ZH-S,
- wherein these lateral shoulders RB-ZH-S of the tumbler pin RB-ZH are shaped such that they correspond to the lateral grooves RB-SN of the key,
- and wherein at a first coding position (P1, P2), the length (ls) of the tumbler pin RB-ZH and the counter pin RB-GZH up to the lateral shoulder RB-ZH-S corresponds to the distance (ds) from the cylinder housing (10) up to the lateral groove RB-SN,
- and the length (lz) of the tumbler pin RB-ZH up to the lateral shoulder RB-ZH-S corresponds to the distance (dz) from the shear line (9) up to the lateral groove RB-SN, with a tolerance region (to),
- so that an additional insertion block in the entry region (RB-E) and an additional rotation block in the coding region (RB-P) can be carried out with the lateral grooves RB-SN of the key and with the lateral shoulders RB-ZH-S of the assigned special tumbler pin RB-ZH.

16. A method for manufacturing a key (S) according to one of the claims 9 to 14, from a blank (R) according to one of the claims 1 to 8, by way of a coding,
characterised in that on the blank (R), a central groove RB-MN is manufactured in the entry region (RB-E) and coding recesses (Cod-V) are manufactured at the first coding positions (P1, P2) in the coding region (RB-P), by way of material removal at the central projecting part RB-M.

17. A method according to claim 16, characterised in that on the blank, firstly a sunk central projecting part RB-M(2) is manufactured in the coding region (RB-P) by way of a first milling cutter, and subsequently the lateral grooves RB-SN are manufactured in the entry region (RB-E) at a high level (N1) and in the coding region (RB-P) at a lower level (N2) by way of a second milling cutter.

18. A method according to claim 17, characterised in that on the blank, and with an inclined pin plane (A) with an inclination angle Wa > 0, firstly the sunk central projecting part RB-M(2) and an additional side groove RB-nn are created by way of a first milling cutter.



PATENT CLAIMS

1. A blank R for manufacturing a security key with at least two coding rows / pin rows (Ai) on the flat sides of the key for an assigned cylinder (Z) with tumbler pins (ZH) and with counter pins (GZH) of a lock system with an insertion block, acting in a vertical direction to the key axis (x), characterised by
- two parallel lateral grooves RB-SN and a central projecting part RB-M between the lateral grooves, and which are formed parallel to the key axis (x) and symmetrically to the central plane of a coding row / pin row (A),
- wherein the lateral grooves RB-SN and the central projecting part RB-M are extending from the key tip to a coding region (RB-P) of the first coding positions (P1, P2)
- and said lateral grooves RB-SN in an entry region (RB-E) at the key tip running at a high level (N1) and in the coding region (RB-P) of the first coding positions (P1, P2) running in a sunk manner at a lower level (N2),
- wherein the lateral grooves RB-SN are suitably shaped, in order to correspond to additional lateral shoulders RB-ZH-S of an associated circularly symmetric special tumbler pin RB-ZH and an extended counter pin RB-GZH at the rearmost coding position (P1, P2) of the cylinder,
- so that an additional insertion block acting in a vertical direction to the key axis (x) in the entry region (RB-E) and an additional rotation block in the coding region (RB-P) can be carried out by the lateral grooves RB-SN of the blank and the lateral shoulders RB-ZH-S of the associated special tumbler pin.

2. A blank according to claim 1, characterised in that the central projecting part RB-M is sunk to a lower level (RB-M(2)) in the coding region (RB-P).

3. A blank according to claim 1 or 2, characterised in that the complete width bg(2) of lateral grooves RB-SN and the central projecting part RB-M on both sides is larger than the width (bcv) of the coding recesses (Cod-V) of the coding row (A) by an amount (bb): bg (2) = bcv + 2 bb.

4. A blank according to one of the preceding claims, characterised in that the width (bm) of the central projecting part RB-M is at least 33% of the complete groove width (bg).

5 A blank according to one of the preceding claims, characterised in that the width (bn) of a lateral groove RB-SN is at least 20% of the complete groove width (bg).

6. A blank according to one of the preceding claims, characterised in that the inner walls (11) of the lateral grooves RB-SN are inclined at an angle Wm to the pin plane (A).

7. A blank according to claim 6, characterised in that the angle Wm is = 10° - 40°.

8. A blank according to one of the preceding claims, characterised in that with an inclined pin plane (A) with an inclination angle Wa > 0, on the inner side, an additional side groove RB-nn adjoins to the lateral groove RB-SN, said side groove forming a supporting surface orthogonal to the coding plane / pin plane (A).

9. A security key with at least two coding rows / pin rows (Ai) on the flat sides of the key for an assigned cylinder (Z) with tumbler pins (ZH) and with counter pins (GZH) of a lock system with an insertion block, acting in a vertical direction to the key axis (x), characterised by
- two parallel lateral grooves RB-SN and a central groove RB-MN and a central projecting part RB-M between the lateral grooves, and these are formed parallel to the key axis (x) and symmetrically to the central plane of a coding row / pin row (A),
- wherein the lateral grooves RB-SN and the central groove RB-MN and the central projecting part RB-M are extending from the key tip to a coding region (RB-P) of the first coding positions (P1, P2)
- wherein coding recesses are formed at the first coding positions (P1, P2) in the region of the central groove RB-MN in the coding region (RB-P),
- and wherein the lateral grooves RB-SN in an entry region (RB-E) at the key tip running at a high level (N1) and in the coding region (RB-P) of the first coding positions (P1, P2) running in a sunk manner at a lower level (N2),
- wherein the lateral grooves RB-SN are suitably shaped, in order to correspond to additional lateral shoulders RB-ZH-S of an associated circularly symmetric special tumbler pin RB-ZH and an extended counter pin RB-GZH at the rearmost coding position (P1, P2) of the cylinder,
- so that an additional insertion block acting in a vertical direction to the key axis (x) in the entry region (RB-E) and an additional rotation block in the coding region (RB-P) can be carried out by the lateral grooves RB-SN of the key and the lateral shoulders RB-ZH-S of the associated special tumbler pin RB-ZH.

10. A key according to claim 9, characterised in that the coding recesses of the first coding positions (P1, P2) are formed on a sunk central projecting part RB-M(2).

11. A key according to claim 9 or 10, characterised in that the complete width bg(2) of lateral grooves RB-SN and the central groove RB-MN on both sides is larger than the width (bcv) of coding recesses (Cod-V) of the coding row (A) by an amount (bb): bg (2) = bcv + 2 bb.

12. A key according to one of the claims 9 to 11, characterised in that with an inclined pin plane (A) with an inclination angle Wa > 0, on the inner side, an additional side groove RB-nn

adjoins to the lateral groove RB-SN, said side groove forming a supporting surface orthogonal to the pin plane (A).

13. A key according to one of the claims 9 to 12, characterised in that RB coding steps Ci* in the coding region are situated higher or more deeply than the standard coding steps (Ci) of the coding row (A) with a correspondingly different length of the assigned tumbler pin RB-ZH.

14. A key according to one of the claims 9 to 13, characterised in that the distance (dN) between the high level (N1) and the lower level (N2) is at least one coding step (dC).

15. A lock system with security keys (S) with at least two coding rows / pin rows (Ai) on the flat sides of the key and with assigned cylinders (Z) with tumbler pins (ZH) and with counter pins (GZH) and with an insertion block, acting in a vertical direction to the key axis (x), characterised by
- keys (S) with two parallel lateral grooves RB-SN and a central groove RB-MN which are formed parallel to the key axis (x) and symmetrically to the central plane of a pin row (A), with coding recesses in the region of the central groove RB-MN at first coding positions (P1, P2),
- wherein the lateral grooves RB-SN and the central groove RB-MN or a central projecting part RB-M are extending from the key tip to a coding region (RB-P) of the first coding positions (P1, P2)
- and said lateral grooves RB-SN in an entry region (RB-E) at the key tip running at a high level (N1) and in the coding region (RB-P) of the first coding positions (P1, P2) running in a sunk manner at a lower level (N2),
- and with assigned cylinders (Z) with a circularly symmetric special tumbler pin RB-ZH at the rearmost coding position (P1, P2) of the cylinder, said special tumbler pin comprising additional lateral shoulders RB-ZH-S,
- wherein these lateral shoulders RB-ZH-S of the special tumbler pin RB-ZH are shaped such that they correspond to the lateral grooves RB-SN of the key,
- and wherein in the entry region (RB-E), the length (ls) of the special tumbler pin RB-ZH and an extended counter pin RB-GZH up to the lateral shoulder RB-ZH-S corresponds to the distance (ds) from the cylinder housing (10) up to the lateral groove RB-SN,
- and at a first coding position (P1, P2), the length (lz) of the special tumbler pin RB-ZH up to the lateral shoulder RB-ZH-S corresponds to the distance (dz) from the shear line (9) up to the lateral groove RB-SN, with a tolerance region (to),
- so that an additional insertion block acting in vertical direction to the key axis (x) in the entry region (RB-E) and an additional rotation block in the coding region (RB-P) can be carried out with the lateral grooves RB-SN of the key and with the lateral shoulders RB-ZH-S of the assigned special tumbler pin RB-ZH.

16. A method for manufacturing a key (S) according to one of the claims 9 to 14, from a blank (R) according to one of the claims 1 to 8, by way of a coding,
characterised in that on the blank (R), a central groove RB-MN is manufactured in the entry region (RB-E) and coding recesses (Cod-V) are manufactured at the first coding positions (P1, P2) in the coding region (RB-P), by way of material removal at the central projecting part RB-M.

17. A method according to claim 16, characterised in that on the blank, firstly a sunk central projecting part RB-M(2) is manufactured in the coding region (RB-P) by way of a first milling cutter, and subsequently the lateral grooves RB-SN are manufactured in the entry region (RB-E) at a high level (N1) and in the coding region (RB-P) at a lower level (N2) by way of a second milling cutter.

18. A method according to claim 17, characterised in that on the blank, and with an inclined pin plane (A) with an inclination angle $Wa > 0$, firstly the sunk central projecting part RB-M(2) and an additional side groove RB-nn are created by way of a first milling cutter.